The Approach

The program is based upon the formation of partnerships and collaborative programs between U.S. and MENA business, academic, NGOs, and institutional entities. The thrust of the program is to build up the MENA S&T private sector via the formation of partnerships stimulating private sector growth, the creation of new economic opportunities, and the initiation of business enabling policy dialogue. Figure 1 illustrates this concept.
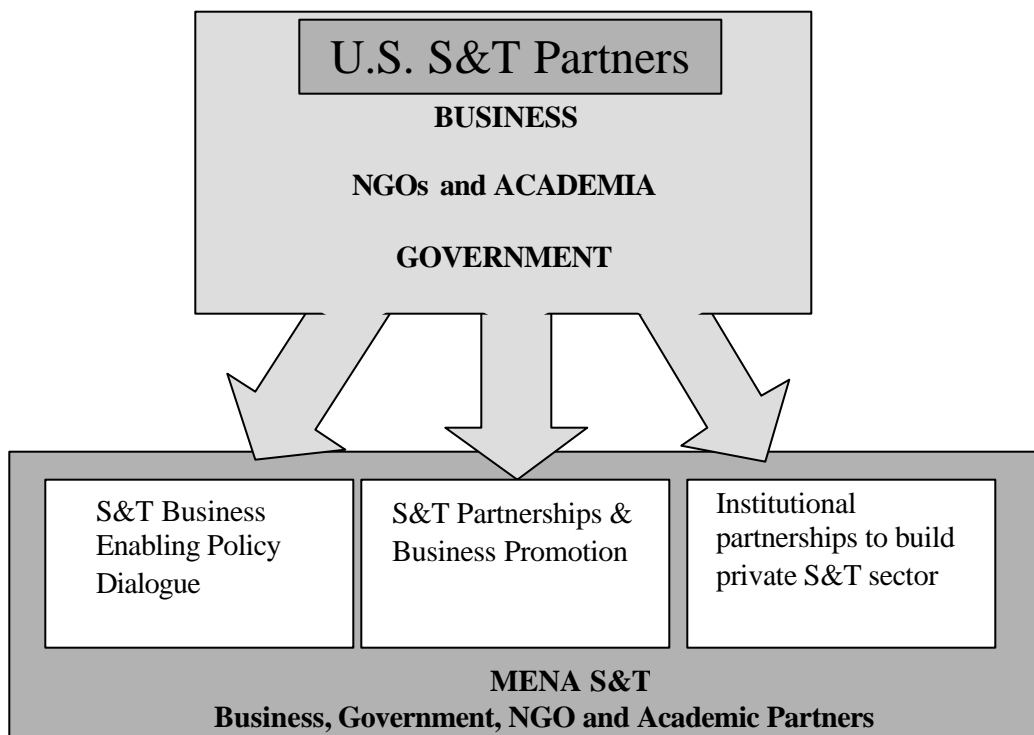
MENA Science & Technology Business

Figure 1. *The S&T Business Development Program is based on formation of partnerships between U.S. and MENA governmental institutions, NGOs, academia, and business, and on conducting policy dialogue to resolve impediments to S&T partnership activities. Activities of the various entities are intended to be complimentary when appropriate.*

Institutional partnerships - are aimed at creating alliances between U.S. and MENA organizations that stimulate the growth of business that either support these partnerships via sub-contractual relationships or commercialize the results of the research and development undertaken by the institutional partners. It is anticipated that U.S. business and NGOs, currently supporting or collaborating with U.S. institutional partners, will be prime candidates for partnering with MENA commercial firms and NGOs. As a result of the partnerships, the U.S. companies will experience expanded market opportunities and increased product exposure and the MENA companies will acquire new service and production capacities**.**

The involvement of academics from technical universities in the MENA region and the U.S. who are expert in international development, and who are or could be involved in cooperative activities in specific technology areas is also essential. Academics, especially non-U.S. academics, are also often entrepreneurs involved in technology-based firms and projects. Further, academics from different countries often know each other through the overlap of technical interests and as the result of meeting at international forums. A case in point is the network between Arab and Israeli scientists and engineers. They constitute an invaluable foundation on which to create cooperative commercial partnerships.

Proposed institutional partnerships under the program include:

- Improvement of weather forecasting
- Research and technical support for the Red Sea Marine Peace Park
- Utilization of the Sea Grant network for capacity building
- Improvement of climate applications for better water resources management
- Development of a multi-national innovation hub to commercialize technology
- Development of an Internet-based communication system to monitor disease outbreaks
- Cooperation in strengthening the regional standards and metrology infrastructure
- Academic/NGO/government/business partnerships

S&T Business Promotion - this component of the program aims to stimulate and enable business partnerships between U.S. and MENA companies. This objective will be achieved through partnership conferences, trade missions, and trade fairs, all of which will be science and technology sector specific in theme. Partnerships may be formed to address specific opportunities, or to support or exploit new infrastructural development in the region. Business plans will serve a justification for applying for public/private funding for further feasibility studies and business start-up. The number of partnership agreements signed and business plans developed will measure success of these activities.

Proposed S&T business promotion activities include:

- Focused support from the Department of Commerce's (DOC) U.S. Commercial Service
- Study of information technology markets in Jordan
- Technology partnerships conferences

- Promotion of telemedicine research and development of Internet infrastructure to support telemedicine via conferences, market research, and feasibility studies
- Organization of S&T solutions exhibitions for critical technology sectors
- Organization of regional distance learning conferences

Business Enabling Policy Dialogue – Policy dialogue between the U.S. Government's interagency partners and their MENA government counterparts will help reduce impediments to business and institutional programs in specific MENA countries or the region. This dialogue can either be program specific where a particular impediment needs to be resolved, or general where impediments impact an entire technology sector. Bilateral or multilateral policy dialogue can also be conducted to explain regulations and/or legal parameters, such as the Export Administration Regulations, that govern operations in the region or a specific country.

Proposed policy dialogue includes:

- Conducting sessions for business on U.S. export licensing guidelines
- Conducting licensing guidelines briefings for DOC U.S. Commercial Officers
- Developing a MENA S&T business development Web site
- Convening meetings of MENA economic attaches to discuss economic priorities, opportunities, and business impediments
- Convening meetings and conventions for U.S. business that reduce red tape and time required for U.S. business to implement initiatives in specific countries

Current Programs – A number of activities are either already underway or planned to facilitate achieving successful S&T partnerships. In addition to creating this document listing recommended activities and initiatives, an inventory of ongoing and planned S&T activities in the MENA region is being compiled. This inventory, routinely updated, is based on information provided by U.S. Government agencies and business, and will negate replication of effort and further enhance opportunities to compliment recommended activities.

Financial Support - Initial financial support for proposed program activities is expected to originate from public sector sources for start-up activities and feasibility studies. Private investors are expected to provide sustained financial support. The recommendations and proposed activities described in this document are intended to serve only as the first phase of what is anticipated to be a long-term program that will change its priorities and methods of operation in response to newly identified needs and expectations in the region.

History of the Initiative - Understanding the role that S&T can play in fostering economic opportunity and regional stability, shortly after the September 11, 2001 attacks, the Technology Administration (TA) of the DOC, started planning the MENA S&T Business Development Program.   TA, in collaboration with other DOC entities, developed a list of proposed recommendations to accomplish the program goal. A U.S. Government interagency working group was convened and recommendations from this group were solicited. Finally, a business

roundtable, organized by the Business Council for International Understanding (BCIU), was convened and their recommendations incorporated. Program implementation is based on the concept of complementarity, i.e., effort is made to complement what one participant, or group of participants, proposes to initiate in the region with the talents and resources of other participants in order to achieve results that are mutually beneficial and yet preserve the credit due to originating entities.

Outreach to U.S. trade and industry organizations continues using the platform of the MENA Business Roundtable. This roundtable is intended to continuously change in composition and grow in size. The roundtable provides insight into impediments, opportunities, and priorities for doing business in the region, and provides a networking opportunity to business partners and opinion-makers in the region. The program will require numerous conferences and symposia in the region focused on key S&T sectors. These events will promote U.S./MENA partnerships, demonstrate new products and services and offer opportunities for bilateral policy dialogue. Policy dialogue will focus on resolving impediments to business development. The entire program is dependent upon a combination of public and private financial resources. Public funds will be used to "spark" promising initiatives, finance feasibility studies, and support conference costs. Private investment will be sought to sustain long-term business and institutional operations.

Recommended Programmatic Activities

<u>**Institutional Partnerships**</u>

National Oceanic and Atmospheric Administration (NOAA)

Recommendation 1: Improve forecasts through use of the weather forecasting workstation – New funding need of $45,000 for one workshop

The following NOAA recommendations are conditioned on new funding becoming available**.**

NOAA's Forecast Systems Laboratory (FSL) conducts applied meteorological research and development to improve and create short-term warning and weather forecast systems, models, and observing technology. Among its clients are many foreign weather forecasting offices and various private interests. FSL has developed a new workstation system called the World Wide Weather Workstation (W4) that is designed to meet the forecast needs of developing nations or for forecast situations where data access is not available. The W4 product provides access to observational and model data through a satellite link. This data, in turn, leads the user towards more complete and accurate weather forecasts. In addition to assisting national weather services, the W4 can be used as a valuable technology for emergency response users with a need to operate in remote locations. Installation of these workstations in the MENA region would enable continuous assessment of the economic vulnerability of the region to violent changes in the weather, the promotion of technological solutions through U.S. Government laboratories, and the opportunity to facilitate cooperation between neighbor states on environmental issues.

One-time capital costs for each W4 station total $13,000 (satellite dish, forecast workstation hardware, and spare parts). The data delivery and acquisition costs grow markedly lower with greater regional participation. Assuming a network of 100 W4 sites, monthly charges for data delivery and acquisition would be $750 per month. Therefore, it is highly important to achieve regional support for such a forecasting system.

Currently of utmost importance is the regional buy-in of the W4 system. Unfortunately, most countries in the MENA region are not aware of this powerful new technology. NOAA proposes holding a workshop at FSL's headquarters in Boulder, Colorado, to introduce the W4 system to representatives from each country in the MENA region. This workshop would serve two purposes: to demonstrate the utility of such a regional forecasting system and to stimulate cooperation between the regional stakeholders. Hosting such a workshop would cost approximately $45,000, including air travel, lodging, per diem, and associated meeting costs.

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Recommendation 2: Partner and Provide Technical Support for Research at the Red Sea Marine Peace Park (RSMPP)

Background

The Red Sea Marine Peace Park Cooperative Research, Monitoring and Management Program (RSMPP) is a NOAA-administered, USAID-funded partnership with Israel and Jordan. The overall goal of the RSMPP Program is to provide resource managers in Israel and Jordan the scientific understanding of the basic physical, chemical, and biological processes in the Gulf of Aqaba, and the impacts of human activities on those resources and processes.

The RSMPP was established as part of the 1994 Peace Treaty between Israel and Jordan, and is composed of the Eilat Coral Reserve and the Aqaba Marine Park. The RSMPP Program is a joint undertaking between the government of Israel and the Hashemite Kingdom of Jordan that fosters trans-boundary cooperation leading to greater conservation and sustainable use of the outstanding coral reef ecosystem resources, which attract large numbers of visitors and associated development. This unique program was initiated in full partnership with resource management agencies and marine research institutions in Israel and Jordan, facilitated through the United States, (funded by USAID and administered by NOAA), and is fortunate to have the involvement of a number of Israeli and Jordanian expert scientists and resource managers.

Part A – Industry to Eco-Tourism Business Partnerships - New funding need of $50,000 for one workshop

Partnering between the U.S. Dive Equipment Manufacturers Association and Jordanian eco-tourism businesses would be ideal for meeting MENA Initiative goals. MENA businesses could purchase identified equipment and supplies (re-breather SCUBA equipment and support supplies, motorized diving sleds, recompression chambers, dive computers, and other cutting edge recreational scuba equipment and supplies) from U.S. businesses, and/or partner with them to distribute and provide technical support in the region. Additional sources of funding would likely be needed to sponsor the early stages of these activities. An initial workshop meeting for U.S. and Jordan business representatives would require approximately $50,000.

Part B – Industry to Scientific Research Partnerships - New funding need of $50,000 to do a workshop on any of the stand-alone activities below

The following topic areas (not in any ranking order) have already been identified as high priorities for expanding the current partnership effort, if additional new funding sources can be identified. All proposed activities would involve U.S., Israeli, and Jordanian businesses working together to support the broader goals of the RSMPP. In addition, activity "F" would involve other countries in the region. It is envisioned that MENA businesses could purchase identified equipment and supplies from U.S. businesses, and/or partner with U.S. businesses to distribute and provide technical support in the region. The U.S. Government would likely need to sponsor/subsidize (partially or wholly) at least the early stages of these activities.

A. Enhancing human diving capabilities for conducting science and management – Current human dive support capabilities for the partner institutions in Israel and Jordan are limited to SCUBA (air and NITROX). Our ability to conduct underwater habitat classification surveys and ground-truthing of GIS maps produced in Phase I of the RSMPP would be significantly enhanced by the acquisition of the new diving technology equipment widely available in the United States (i.e., mixed gas diving capability) and equipment (i.e., rebreather SCUBA equipment and support supplies, motorized diving sleds, recompression chambers, underwater research habitat/laboratory, and unmanned and manned submersible).

B. Un-manned *in-situ* observations capabilities - Knowledge of both biological and physico-chemical parameters is somewhat limited in the northern Gulf of Aqaba because of its great depth (approximately 1,000 meters) that occurs relatively close to shore. A number of new technological advances that are currently available in the United States would significantly expand the knowledge base of the deepwater ecosystem of the Gulf of Aqaba (tethered and un-tethered remotely operated vehicles, acoustic Doppler current profilers, remote telemetry data loggers, side-scan sonar/multi-beam substrate type assessment). New data acquired with these technologies would enhance the somewhat elementary physical circulation models and GIS marine resources maps, referred to in item C below, that have been produced in Phase I of the RSMPP.

C. Remote sensing and GIS technology - A principal product of Phase I of the RSMPP Program is a geo-spatially referenced map (with multiple data layers) of habitat types and water column resources. However, the elementary product of Phase I RSMPP is limited to small areas near shore, in less than 20-meter depth. In-situ ground-truthing has limited both the overall spatial resolution and the number of data layers. This greatly inhibits the development of a comprehensive trans-boundary marine resource management plan. Utilization of various remote sensing platforms and equipment (i.e., fixed-wing, satellite, shore based,) along with data acquired through A and B above, would allow for a greatly enhanced GIS database. There is also a desire by the partners to merge the two parallel GIS databases that now exist for each side into a single database that will be jointly managed and accessible to all partners 24 hours each day. This would require state-of-the-art GIS software, hardware, and high-speed data transmission infrastructure between Aqaba and Eilat.

D. Data Management - Just as with the GIS, the partners desire to merge the two existing parallel data management systems into a single shared master data system. Clearly, even without any new data acquisition described above, there will still be a need for state-of-the-art data management technology software, hardware, and high-speed data transmission infrastructure.

E. Training - All of the items discussed above will require comprehensive joint training workshops and classes for personnel in Aqaba and Eilat to become proficient in these new technologies. However, both countries do have a strong foundation from which to build. NOAA has expertise in all of these areas, but the overall effort would be enhanced with the active involvement of the U.S. manufacturers of the various technologies.

F. Middle East Regional Data Management Center - As a spin-off of the RSMPP Program, and previous research conducted in the Pacific Islands, a first-of-its-kind Middle East Regional Science Symposium and Workshop on Butterfly Fish Research and Monitoring will be held in Aqaba, Jordan, in June 2002. The focus of the Symposium will be to bring together residents from the region who are conducting butterfly fish research and monitoring (with some special invited guests from outside the region who are experts in this field), in order to share experiences and knowledge. The focus of the Workshop will be to determine how best to coordinate sharing of data between all Middle Eastern countries that are conducting butterfly fish research and monitoring. In particular the concept of a Middle East Regional Butterfly Fish Data Management Center will be discussed in depth. If participants agree that this would be of value, we propose that Aqaba (ASEZA) serve as the central hub for such a data management center, with full data input and sharing by participating countries in the region. Implementation of such a Center will require that all participating countries have the newest technology data management software and hardware, along with high-speed data transmission capabilities.

Recommendation 3: Utilize the Sea Grant Network as a Unique Model for Capacity Building – New funding need of $50,000 for one workshop

NOAA's National Sea Grant College Program (Sea Grant) provides a unique, effective paradigm and role model for global capacity building and enhancement of management performance that complements other approaches to that end. First and foremost Sea Grant is an effective model for the engagement of universities and government agencies acting in partnership to promote research, education, and technology transfer related to marine issues. Moreover, the paradigm is inherently flexible, both culturally and administratively, and can be adapted to a diverse array of university and governmental constructs, i.e., tailored to the idiosyncrasies of the host country including language, customs, and management by indigenous institutions. Resources can be provided by numerous mechanisms, but however funded, the program becomes part of the permanent infrastructure of the host country and does not require ultimate dependence on U.S. or other foreign aid, just domestic sources of revenue.

Sea Grant is in the unique position to help guide U.S. efforts to protect the earth's atmosphere and oceans as well as its biological diversity. It promotes and supports regional cooperation efforts, such as MENA, because these countries face a series of complicated and interrelated transboundary environmental challenges that cannot be solved through individual efforts. Issues such as air quality and water resource management can be a source of regional cooperation or contribute to political and economic tensions.

Sea Grant can launch a regional or country-specific program by providing the expertise needed to solve critical environmental problems. Since MENA buy-in is important, Sea Grant proposes to hold a workshop, in Silver Spring, Maryland, to introduce the Sea Grant paradigm to environmental policy makers from the MENA region. The workshop would demonstrate the Sea Grant system and, at the same time, introduce these policy makers to each other. Hosting such a workshop would cost approximately $50,000, all travel/lodging and meeting costs included. A

follow-up workshop in 2003 could be held in one of the MENA countries for approximately the same amount of funding.

Recommendation 4: Identify Climate Applications Needed for Improving Water Resources Management - New funding need of $150,000 for three workshops

Drought on a seasonal to long-term basis is one of the major climate related concerns in the MENA region. Therefore, the understanding of the dynamic interaction between climate and water resources, and the application of this to other climate-sensitive sectors, such as agriculture, has great potential for contributing to the development of improved policy environment that can significantly reduce the risks of water shortage. An added benefit would be the possible reduction in conflicts among the users of water resources in the MENA region.

The goals of this initiative are to identify climate applications needed to improve water resources management for sustained agricultural production and to identify and examine the constraints in the implementation of these climate applications in the MENA region. The initiative should spur continued collaboration with universities, research institutions, and other climate or environmental change institutions.

NOAA would hold three regional workshops, in Northern Africa, Eastern Africa, and the Middle East, with the same objective. This is because the 12 MENA countries can be categorized into these three zones based on their geographical contiguities. The audience of the workshops will be multidisciplinary groups, including physical and social scientists, the private sector, policy/decision makers, and civil society. The outputs of the workshops would create opportunities for the MENA region to use the present scientific understanding of climate variability and change for increased resilience, better coping mechanisms, and effective adaptation to reduce the region's present vulnerability to climate change and variability.

Specifically,

- The workshops will identify specific zonal climate forecast information needs, gaps in the regional capacity for addressing the water resources problems, and use this information to develop policy options for improved water resource management. This would potentially minimize current and future water related emergency actions. Other benefits will be saving lives, reducing human suffering, and minimizing economic loss to the MENA region.

- The aftermath processes of the workshops will lead to improved capacity in decision making for planning for water resources and the agricultural sectors, including increased decision options for farmers and other users of the climate information.

The cost of three workshops would be $150,000, covering travel, the per diem of the participants and facilitators, and other related workshop costs. The workshops may be spread over three years, one per year starting in 2002.

This initiative builds on the lessons learned from ongoing efforts. There is an ongoing related activity in the North African region by Dr. Ana Eglesia of Columbia University, New York. Dr. Eglesia is working on climate information and improved agricultural production in Spain and the southern Mediterranean countries of Morocco, Egypt, Tunisia, and Algeria. At NOAA's Office of Global Programs, the Climate Information Project (CIP) uses radio and multimedia technology for the communication of hydro-meteorological information to rural communities in developing countries.

Department of Energy/Sandia National Laboratories/Advanced Concepts Group

Recommendation 1: Sandia National Laboratories proposes an idea to create a Multi-National Innovation Hub (MNIH) designed to serve as an engine for sustainable economic development in the MENA region through the development, spin off, and commercialization of applied technology. New enterprises will emerge, apply the technologies to local problems, and produce products for the global markets to bring new wealth into the area and create high paying jobs. The idea is to bring together top scientists and eager entrepreneurs from around the region and the world and attract investors, financiers, and corporations to support start-up companies based on innovations developed at the hub.

The MNIH will emphasize integration of the technology development efforts with national capacity-building programs. Participating countries will be offered an opportunity through the MNIH to train new generations of scientists and engineers in leading-edge research areas. The integrated teamwork necessary to move a technology into the commercial arena—teams composed of experts in technology development, technology deployment, social sciences, business development, marketing, and finance—will help ensure that the technologies developed will move into local and national economies and stimulate the wealth creation that is so central to the purpose of the MNIH and the overall well being of the region's population.

The MNIH will have close ties to many private and public organizations of countries in the region, and throughout the world. It will enter into research relationships with universities and industry, into capacity-developing relationships with training and educational institutions, and into economic development relationships with municipalities, states, and other community and governmental organizations.

Funding for the MNIH will come from many sources. The nature of the revenue stream will change as the lab matures. Initial funding will be in the form of grants, particularly for the start-up period of 3-5 years. These grants may be from governments or foundations, and will be used to fund organizational development and initial research efforts. Some participating countries may be able to contribute funds for operation; others may contribute manpower or other 'in-kind' resources.

In the second period of funding, as the lab establishes a reputation and credibility for its work, it is anticipated that funds will begin to flow for contract research. The lab will be tasked by a

funding entity (whether that be public or private) to work on a problem of specific interest to that entity. This period also will see continuation of grant funding, as the lab continues to pursue its work in the public interest.

The third period of funding will add royalty or license income to the mix. As the lab develops intellectual property and begins to spin it off into revenue-producing businesses, the income will flow back into the lab as a return on the licensing of the intellectual property. Contract research will continue, as will work funded by grants.

Recommendation 2: This is a short-term project relating to public health designed to facilitate communication between epidemiologists and rapid detection of a disease outbreak. The Rapid Syndrome Validation Project (RSVP™) is an Internet based population health surveillance tool designed to facilitate rapid communications between epidemiologists (public health officials in local public health jurisdictions) and health care providers (especially physicians, physician assistants and nurse practitioners).

RSVP is being developed at Sandia National Laboratories, a Department of Energy laboratory in Albuquerque, New Mexico, in collaboration with epidemiologists and public-health officials at the State of New Mexico Department of Health and clinicians from several clinics. For clinicians, RSVP provides immediate feedback with data of relevance to the individual patient reported as well as continuous updating of the geographic and temporal characteristics of symptom distribution in the local community. This includes timely analysis from local epidemiologists (city, county, or state depending on locale) as well as alerts regarding serious disease outbreaks based on historical experience or ongoing investigations. For the epidemiologist in the local public health office, RSVP provides real-time data reporting, the ability to perform a wide array of the Geographic Information System (GIS) analyses, and a fast, convenient way to communicate with all reporting clinicians on the network. RSVP quickly catalogues all reports (immediately, after each case entry) into an easy to understand feedback summary, instantaneously viewable by local public health officials and physicians. Retrieval of raw data is also simple, and permits public health officials to effortlessly transfer data into their favorite statistics packages for further analysis. The Geographic Information System tools within RSVP facilitate analysis.

Technology Administration/National Institute of Standards and Technology (NIST)

Recommendation 1: NIST implements programs to help strengthen the standards and metrology infrastructure of the MENA region.

All recommendations given here are dependent on external funding; the National Institute of Standards and Technology (NIST) is unable to support these activities within its current budget. NIST plans for activities in the MENA area will strengthen the standards and metrology infrastructure and would focus on two main directions; metrology and calibration capabilities, and documentary standards and conformity assessment.

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1. Metrology and Calibration Capabilities

A. In the area of selected physical and chemical metrology, as a first step, we would propose a workshop similar to one held in May 2000 entitled "An Industry Needs Assessment in Egypt." The purpose of the workshop would be to bring together private sector industries and the National Metrology Institutes (NMIs) from the region to identify measurement capabilities and related services that must be developed in order to support the key industries of the region. The local NMIs must be able to provide measurement and standards services and support to the local industry to enable them to compete both regionally and in the global marketplace. Some areas that might be addressed are: developing relevant measurement capabilities, improving measurement services, legal metrology, improving product quality and reliability, modernizing manufacturing processes, facilitating rapid commercialization, and assisting in international acceptance of goods and services. During the workshop, industry participants would be expected to identify specific needs, *i.e.* standards-related services, and types of measurement capabilities, that are critical to local industry. As a result, strategic programs could be developed and implemented aimed at improving metrological capabilities in these key areas.

B. Based on the findings from this workshop, recommendations could be made to establish and implement one or more Measurement Assurance Programs in those areas deemed most important to support the metrology needs of the region's private sector. These programs could include the implementation of one or more round robin exercises, designed to improve specific measurement capabilities of the laboratories, both government and private, who are responsible for measurements and calibrations supporting trade. Inter-laboratory comparisons, or round robins, are important measurement assurance tools to provide independent verification of the bias and precision of a participant's measurement process, provide quantitative data for improving each participant's measurement capability, and increase each participant's confidence in their measurement capability.

Following each round robin exercise, a meeting should be held to inform the participants of the general outcome of the exercise, discuss biases and other problems that arose during the measurement process, and how to implement improvements to increase accuracy and reduce bias.

2. Documentary Standards and Conformity Assessment

A. The relationship between voluntary standards, conformity assessment procedures, technical regulations, and trade are of particular importance to countries in the Middle East and North Africa region as they seek to increase production and expand opportunities to participate in the global market. Technology and programs that increase access to, and use of, international standards and conformity assessment guides and standards in support of market-based systems and regulatory institutions are critical to long-term technical infrastructure development prospects in the region.

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NIST could work with the American National Standards Institute (ANSI), a private-sector entity, and the countries in the region to determine the extent of current participation in international standardization and conformity assessment activities and any general and technology-related obstacles to that participation. NIST could also provide sources of information, keyed to major exports and imports of Middle East and North African countries, on voluntary international standards, technical regulations, and conformity assessment procedures. Once the results of this initial work are known, NIST would work with ANSI, its membership, and any other interested parties to provide training, access to technology, and any other follow-up activities deemed necessary to overcome any obstacles identified. This effort would support implementation of the U.S. National Standards Strategy, overall trade liberalization efforts, and facilitation of adherence to member obligations under the World Trade Organization's Agreement on Technical Barriers to Trade and the Agreement on Sanitary and Phytosanitary Measures.

B. At a sub-regional level and pending full funding from outside resources, the National Institute of Standards and Technology (NIST) could offer a training workshop on documentary standards development and conformity assessment systems in the United States. The Standards in Trade (SIT) Workshop could be held in fiscal year 2003 at the Gaithersburg, Maryland, campus for up to 24 representatives from countries in the region. The overall program objective would be to enhance U.S. economic competitiveness by eliminating technical barriers to trade caused by a lack of harmonization of standards, conformity assessment, and measurement systems. Similar to the above project, this objective complies with the requirements of the World Trade Organization's Agreement on Technical Barriers to Trade.   The workshop will assist in developing professional contacts as a basis for strengthening technical ties and enhancing trade between the U.S. and its Middle East trading partners.

The basic agenda would include briefings and panel discussions with private sector and government experts followed by question and answer discussions and visits to NIST laboratories and field sites. A forum on the last day of the workshop would identify technical issues in standards and conformity assessment that might be considered technical barriers to trade and suggestions for follow-on activities. The participants would focus on possible strategies to enhance trade between the United States and the invited countries.

Again, NIST participation in the activities suggested above would only be possible with external funding, as the activities are unforeseen in current budget plans.

Markle Foundation (Business Roundtable, NGO)

Recommendation 1: Promote three-way partnerships between government, business, and the non-profit/academic community to foster science and technology capacity and policy in the region.

Non-profits have played an important role in fostering science and technology capacity and policy in the developing world. One example is the African Technology Policy Secretariat, launched a decade ago with the support of Carnegie and Canada's IDRC, with local chapters that network across the continent on both small grants research and policy.

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Non-profits can also be key partners in developing local entrepreneurship. For instance, Kosovo's leading ISP, known as IPKO, began as an initiative funded by the International Rescue Committee to connect relief agencies and re-establish communications in the war-torn state. The Markle Foundation has incubated a startup called Voxiva as a "social venture" addressing health, microfinance, and other social and commercial needs in developing nations.

Massachusetts Institute for Technology/Center for Technology, Policy and Industrial Development (Business Roundtable, Academic)

Recommendation 1: Identify and involve the relevant academics and technical institutions (universities, laboratories, and governmental funded initiatives) that could assist in the formation and maintenance of institutional partnerships discussed above.

<u>**S&T Business Promotion**</u>

International Trade Administration/ U.S. Commercial Service - Africa, Near East, South Asia

Recommendation 1: Participate in the work of the MENA Program via the network of officers and Foreign Service Nationals (FSNs) of the U.S. Commercial Service at selected Middle Eastern posts. These officers and FSNs will use their expertise to identify host-country people, scientific institutions, non-governmental, and/or governmental entities and resources for approved MENA projects.

International Trade Administration/Office of Telecommunications Technologies

Recommendation 1: Contingent on available resources undertake a comprehensive study of information technologies markets in Jordan. The study is to provide an in-depth look at Jordan's telecom, computer/software and e-commerce markets, with an emphasis on near- and medium-term commercial opportunities that will entice U.S. exporters and investors to take a closer look, especially now that the U.S.-Jordanian FTA is in place. The resulting *ITExport* study may lead to a trade mission to Amman in spring, 2003.

While Jordan is not the largest or most lucrative IT market in the Middle East, **U.S. telecom exports to Jordan increased 180 percent from 1999-2000, by far the largest rate of increase among Middle Eastern** countries. A study of Jordan's IT markets, which are expected to grow rapidly over the next five years, is also warranted for several other reasons:

- **Free Trade Agreement** - the U.S.-Jordanian Free Trade Agreement will significantly improve the prospects for trade between the United States and Jordan by reducing tariffs, protecting IPR, etc. The IT study will help make the FTA a success. The FTA has a specific section on electronic commerce and will cover telecom services.

- **Jordan's Growing IT Sector -** One of the bright spots in Jordan's somewhat lackluster economy has been the emergence of growing telecom and information technology industries. King Abdullah made telecom/IT a national priority in 1999, resulting in the drafting of a national strategy to develop Jordan's telecom/IT sectors. The documented strategy, called the Reach Initiative, is considered a significant initial step in Jordan's quest to become a global information technology player.   Since the release of the initial Reach report, King Abdullah has engaged in a high-level campaign to court international, and especially U.S., telecom/IT firms to look at business opportunities in Jordan.

- **Interest of American IT firms** - While there have already been a number of successful U.S.-Jordanian IT partnerships and trade has been growing rapidly, the U.S.-Jordanian FTA is expected to spark a great deal of interest in Jordan's IT markets. While the markets of a number of other Middle Eastern countries have been examined, ITA has not conducted a current, comprehensive study of Jordan's IT markets. Finally, the U.S. Trade and Development Agency is supporting a study by a U.S. firm to construct a fiber optic network that would markedly improve Jordan's telecom infrastructure and create opportunities for other equipment and service providers.

- **Telecommunications Privatization** - The ongoing privatization of Jordan's telecom sector will create opportunities for the sale of telecom equipment.

Technology Administration/Office of International Technology

Recommendation 1: Convene several business and academic technology partnership confe rences during the next two years in the MENA region that stimulate partnerships between U.S. and MENA small to medium sized technology enterprises (SMEs). (New funding needed - $25-50,000/conference)

These conferences will focus on enabling U.S. and MENA SMEs to form business partnerships that will allow easier access to MENA by U.S. technology SMEs and give new capacities for MENA partners to provide technologically innovative products and services. The conferences will promote technology business partnerships that are responsive to technology needs in the region. Technology needs are primarily related to water, information, agriculture, construction, pharmaceuticals, and health care sectors.

Technology-sector-specific SMEs will be identified with the assistance of export promotion authorities, professional trade associations, chambers of commerce, sister city programs, and the DOC Commercial Service. Video-transmitted orientation meetings will be convened for prospective participants prior to the conference. Relevant technology business opportunities will be identified. These opportunities will be the focus of business planning and partnership discussions by conference participants.

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The first of these conferences, concerned with information technology (IT), convened in Alexandria, Egypt, in May 2002. Information about the event can be found at http://www.ta.doc.gov/International/Events.htm. In conjunction with this event, **the University of Maryland at College Park, Maryland (UM)** is working on three partnership programs in Egypt:

A. Developing a distance-learning program for Egypt, which will link UM with one or more institutions in Egypt. The IT and distance learning programs will be developed according to specifications provided by collaborating Egyptian institutions. Cooperative programs are currently planned with:

1. The Alexandria Business Association (IT Education Center)
2. The University of Alexandria (Distance-Learning Program)
3. Cairo University (Distance-Learning Program)

These initiatives also aim to provide IT connectivity to rural areas in Egypt and provide workforce training in the rapidly changing field of IT. UM and the Egyptian Ministry of Communication and Information Technology plan to cooperate in using IT to extend the intellectual resources of Egyptian universities to a broader community of potential beneficiaries. The program will strengthen Egypt's public and private sector commitments to develop entrepreneurship, openness, and investment in human resource development.

B. UM is also developing a collaborative program with the Egyptian Ministry of State for Environmental Affairs in the following areas:

1. Air pollution prevention and mitigation
2. Industrial wastewater treatment

The strategy to develop the above collaboration is based on transfer and adaptation of U.S. S&T to the Egyptian environment. This will be achieved by forming partnerships between U.S.-based SMEs and Egyptian companies. Implementation of the program is already underway.

C. UM is collaborating with the Government of Egypt in the area of developing Technology Parks. UM will invite several U.S. high-tech companies to initiate an incubator program in the areas of IT, biotechnology, power, and energy technology.

Technology Administration/Office of Technology Competitiveness

Recommendation 1: Design and carry out a prototype sectoral initiative for telemedicine coordinated by Technology Administration (TA) and Health and Human Services' Office for the Advancement of Telehealth (OAT). (new funding needed - $75,000)

A telemedicine focus will provide an opportunity for early successes for the program. For example the Health and Human Service Office for the Advancement of Telemedicine is agreeable to scheduling study tours of U.S. telemedicine research projects and working facilities

for MENA healthcare and telecommunications executives and officials.   The American Telemedicine Association (ATA) can mobilize its member companies to support a telemedicine symposium in conjunction with the IT Partnership Conference in May 2002 in Alexandria, Egypt described above. Additionally, a MENA delegation could attend the annual conference and trade show of the American Telemedicine Association in Los Angeles on June 2-5, 2002. The program can work with USAID to include telemedicine applications when advising USAID and its NGO partners programs for front line states. The program can reach out to and assist telemedicine industry associations in developing international programs to include conferences, market research, or feasibility studies and export promotion. The program can work with TDA to target MENA healthcare sectors for feasibility studies.

Department of Energy/Office of International Affairs

Recommendation 1: **Support the expansion of the current DOE/USAID funded demonstration desalination project in Jordan to other Middle Eastern countries.**

The United States is currently involved in a multilateral effort with Jordan, Israel, and the Palestinian Authority to develop village-scale water development, treatment, and reuse projects for remote areas, using renewable energy. This project evolved out of an ongoing trilateral (Jordan-Israel-PA) workshop addressing water security issues. The goal is to use reverse osmosis powered by solar energy to provide self-contained potable water supplies for remote communities that have access only to brackish water.

Jordan is the site of the first demonstration project, which is currently in progress with funding from USAID and DOE. The project will be carried out in the village of Qatar, a remote, impoverished community 35 kilometers north of Aqaba that was selected by the Jordanian Ministry of Water and Irrigation. It will use a Department of Defense (DOD)-surplus portable desalination unit adapted for use with solar energy by DOE's National Renewable Energy Laboratory and Jordan's National Energy Research Center. (A similar project in the Palestinian Authority is planned but not yet funded. The Jordanians have also requested a second project, if funding becomes available.) The larger goal is to expand regional S&T cooperation in the area of desalination technology by promoting similar projects, to be carried out jointly by Jordan, Israel, the Palestinian Authority, and the United States and to lay the basis for regional economic development through local manufacture of desalination units designed specifically for conditions in the Middle East.

EdNetSat (*Business Roundtable Member*)

Recommendation 1: Run an S&T Solutions Exhibition to highlight the latest solutions that could be used by MENA countries in advancing IT, health, agriculture, water, energy, construction, pharmaceuticals and chemicals. The exhibition would be comprised of roundtable discussions with public, NGO, and private sector leaders to identify global and bilateral programs that would enable the rapid regional uptake of the latest in technological solutions.

MENA program participants should seek to develop a framework that will identify and support the rapid uptake of S&T solutions throughout MENA. Trade fairs typically bring a hodgepodge of business and institutional products and services without a business support infrastructure (knowledge of laws and regulations, financing mechanisms, access to local operations support, etc.). Indeed any substantial increase in trade between the United States and MENA will require considerably more in the way of support services, because today's volume is relatively low.

The result should be increased contacts among U.S. and MENA interests, a better understanding of the opportunities, obstacles, and possible solutions to enable the rapid uptake of S&T solutions, and a series of programs to bring progress in each of these areas.

Recommendation 2: Support a distance education conference with exhibitions to increase interest in and knowledge of the opportunities available in the region.

Education is as important in MENA countries as it is in the United States. Substantial progress has been made in the United States and elsewhere on distance education. Indeed, education is a major foreign exchange earner for the United States, not to mention the technology that supports distance education.

Distance education would be particularly helpful for science and technology education. There are now limited *ad hoc* efforts underway to explore utilizing distance education to schools in MENA countries. MENA program participants could help in organizing trade fairs on distance education to bring together universities and companies in this country that could help provide science and technology training to schools throughout the MENA region.

Recommendation 3: Act as a catalyst to provide an Internet infrastructure that will enable schools, hospitals/clinics, SMEs and governmental entities to have access to and benefit from the Internet and the services it offers.

MENA countries do not have the Internet infrastructure needed to take advantage of Web-based solutions that could greatly benefit them. Of course, this is similar to most developing countries.

A public/private group has been working for some time on an Internet infrastructure that would make available such solutions around the world quickly, affordably, and sustainably. Its work is based on numerous multilateral, national, and private studies, built on best practices that have worked in this country and developing countries. Comparable efforts include Fannie Mae and Freddie Mac: government-chartered, private entities that launched the secondary markets for home mortgages.

In a sense, this would require MENA program participants to act like DARPA did when establishing the Internet. But participants' interest would be in providing an open infrastructure that would make all Web-based solutions available for schools, hospitals/clinics, SMEs, and governmental entities.

As the U.S. Web-based Education Commission said (and it is applicable for healthcare as well), "There are no technical reasons why we cannot make the benefits of Web-based education available to everyone; it is simply a matter of our will. The choices we make in terms of organizing and funding will determine who benefits and how quickly."

Networked computing for schools, hospitals/clinics, small to medium sized enterprises (SMEs), and governmental offices is not a trivial matter if it is to be done affordably and practically. This goes well beyond buying a computer or two and getting an Internet connection. It requires technical expertise and purchasing power well beyond what is available to individual operations. To enable rapid penetration of the education and healthcare markets for modern professional and administrative services, as well as the technology needed, a framework is required that provides:

- Broadband networked computing for capabilities needed in schools and healthcare institutions
- Equipment and services must be integrated (content, hardware, software, communications)
- More than the Internet, tie-in CDs, print media, videos, TV, existing systems
- Must service multiple uses and users
- Affordable equipment and communications

This framework can be achieved with:

- Economies of scale with volume purchases
- Efficient network: architecture design and management
- Modular and scaleable for easy upgrades
- Sharing best practices/avoiding mistakes
- Help in planning, financing, installing, and training
- Help in staying current, upgrading, and localizing
- Organizational development
- Neutral organization to act as catalyst
- Link public, private, non-profit, and foundation funding
- Encourage localization, and benefit from globalization

The consortium of companies and institutions working on this infrastructure would:

- Arrange for standardized packages of equipment, communications, and network services that are affordable and universally available
- Make available web-based content and support other existing media (e.g., TV, video, print)
- Help with the planning, installation, maintenance, training, and in-service support so the networks can be used most effectively
- Provide assistance with financing

- Develop the organizational infrastructure to rapidly grow and service the education market

The organizational model proposed is as follows:

- Global consortium to aggregate network services, manage network, package equipment and services, set service standards, provide procurement support, and build international consortium
- National companies market, install/maintain, train, and localize content
- Best-of-breed suppliers collaborate
- Professional affiliates help manage content
- Communities of interest develop content and provide mutual support

This development has been extensively researched and planned, the connections made among key companies, institutions, governments and multilateral institutions on content, technology, and communications services. As such, it could be launched quickly.

Massachusetts Institute of Technology/Center for Technology, Policy and Industrial Development

Recommendation 1: Identify and involve the relevant academics and technical institutions (universities, laboratories, governmental funded initiatives) that could assist in the formation and maintenance of S&T Business Promotion discussed above.

Business Enabling Policy Dialogue

Verner, Liipfert, Bernhard, McPherson and Hand, Chartered (Business Roundtable)

Recommendation 1: Develop an institution, modeled after the U.S. Telecommunications Training Institute (USTTI) or U.S. Environmental Training Institute (USETI) to bring technology policy officials from the MENA countries to take short term training "classes" at U.S. private sector firms and organizations. These classes could be anything from formal classroom-type instruction to informal, "work-along-with-me" sorts of programs and "taught" by appropriate executives from those private sector hosts.

USTTI and USETI have had great success in educating mid-level policy officials from the developing world to understand how to promote telecom and environmental goals by hooking them up to the U.S. private sector. The same could be done in the S&T business development arena with officials in appropriate ministries. The people selected for the program should be destined for top level government positions and thereby be in a strong position to create a more encouraging atmosphere for S&T business development. They could come from a number of agencies of government, since successful S&T-based business development depends on an encouraging atmosphere in many policy areas from taxes, to IPR protection, to proper depreciation allowances, to fostering technical and business education and beyond.

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International Trade Administration/Office of the Under Secretary-Counselor, Technology and Entrepreneurism

Recommendation 1: Organize a Technology Entrepreneurial – Innovation Forum that brings together U.S. and host country entrepreneurs, government, capital, and academic communities to develop an interchange on:
- **Entrepreneurial training**
- **Capital formation**
- **Legal/regulatory and physical infrastructure**
- **Role of innovation**

Each forum would require an estimated budget of $50,000.

Background

The growth of modern economies is closely tied to the technological developments and the enterprises that bring the technologies to the market space. A recent study by Accenture [a] found:

"All over the globe, executives in the private, public and non-profit sectors think entrepreneurial behavior is key to the overall success of their organization and the competitiveness of their countries. Yet the entrepreneurial spirit is proving elusive. Only four in ten executives think their organizations are very entrepreneurial today. Why?"

While the Accenture study focused primarily on existing enterprises and internal entrepreneurial spirit, the overall area of technology entrepreneurism within many nations is similar. The problems that young entrepreneurs face concern:

- **Entrepreneurial training** consisting of the basic fundamentals on the mechanisms for establishing, managing, and growing enterprises. While many technology entrepreneurs have the technical ability, overall many lack the management skills necessary to successfully launch and build enterprises.
- **Capital formation** for start-ups, as small and medium technology enterprise is either non-existing or minimal. While capital exists, the structure for making capital available to these early stage technology enterprises that are in a higher business risk space is often lacking. Angel and venture capital groups either may be small or non-existing.
- **Legal/regulatory and physical infrastructure** suitable for starting, building, and operating technology enterprises must be available. These critical elements must be in place that will encourage the growth of technology enterprises.
- **Role of innovation** is key to the development of technology enterprises. The ability to take research, either governmental or private and translate it into commercially successful products and services are the *seeds* of building technology enterprises.

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[a] Accenture, Liberating the Entrepreneurial Spirit, 2002

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Many nations in the MENA region lack some or all of the above elements. The forum would serve in bringing together groups from the United States and MENA nations to discuss these elements and then formulate recommendations for improving the process of technology entrepreneurism and innovation in host nations of the region.

Proposed Action Plan

To move forward on the establishment of this forum it is proposed that a two phase process be used:

Phase 1

- Form an interagency working group
- Choose a country, such as Jordan to design and hold an initial forum
- Review the results from the prototype forum and modify the design if necessary

Phase 2

- Develop and convene similar forums for other MENA nations

Plan Elements

- Each host country covers the cost for the forum in their country
- U.S. participants cover their individual or institutional costs
- A report covering the forum and recommendations is prepared
- Follow-up review is conducted to determine the success of the forum in improving technology entrepreneurism and innovation in the host country

Hewlett-Packard Company

Recommendation 1: Encourage collaboration among high-tech companies and local entrepreneurs and SMEs to develop policies that promote economic development in the MENA region.

Small and medium enterprises (SMEs) and entrepreneurs play an integral role in the development – and sustainability – of a country's economic strength. Local innovation spurs economic growth and employment, while information technology tools increase business opportunities while also creating access to other basic needs. Information and communication technology is not the goal, but rather it is a part of the strategy to accomplish the goal: realizing sustainable growth, building strong economies, strengthening education systems, improving available health care, and updating and improving access to other basic needs. Partnerships that combine the strengths of information technology and local entrepreneurs help spur local economic growth, which, in turn, decreases poverty and provides sustainable solutions.

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Bureau of Industry and Security

Background

The Bureau of Industry and Security (BIS), which regulates the export and re-export of dual-use U.S. origin goods and technologies, has a number of programs in support of the MENA initiative. These activities consist of outreach and educational programs for U.S. industry, foreign governments, and U.S. Foreign Service and Commercial Service officers in the Middle East and North Africa. While the Bureau's primary mandate is to protect national security, BIS's activities also facilitate trade as greater knowledge of U.S. export controls enables businesses to concentrate on non-controversial items and to pursue deals where licenses will likely be granted. Attachment 1 is a summary of the export controls that may apply to the activities proposed by the MENA initiative.

The Bureau offers industry a regular schedule of seminars on export controls and related topics and briefs U.S. Foreign Service and Commercial Service officers on the specific export control and enforcement requirements for countries in which officers are posted. The Bureau also has conducted workshops at regional meetings of U.S. Commercial Service officers. These outreach efforts can be tailored to MENA countries and companies participating in the initiative. The Bureau is finalizing a plan to place attaches in the United Arab Emirates and Egypt. These individuals will work closely with the economic and U.S. Commercial Service officers at the U.S. Embassies in Abu Dhabi and Cairo and will be available for consultation with industry as well.

While the Bureau is prepared to assist and advise, it is the responsibility of participants in the program, whether United States Government or industry, to obtain the proper authorizations, including licenses if required, for the export and re-export for use with the program. It is also the responsibility of participants to be aware of and comply with the anti-boycott provisions of the Export Administration Regulations, particularly as the program expands. Participants unfamiliar with U.S. export controls should review Attachment 1 (referenced above). Further information is also available from BIS and on the Internet at **www.bis.doc.gov** and **www.access.gpo/bis/ear** (the on-line version of BIS's regulations, including the anti-boycott provisions.

Recommendations:

Recommendation 1: BIS seminar staff, perhaps in conjunction with other programs, could conduct sessions on export licensing guidelines on MENA countries for groups of U.S. companies participating in the MENA program.

Recommendation 2: Brief the BIS attaches who will be reporting to Egypt and the United Arab Emirates and the U.S. Commercial Service officers being posted to the region on the initiative. This will assist the BIS attaches in carrying out their mission of training

companies to distinguish legitimate business opportunities from illegitimate ones. The briefings also will assist the BIS and U.S. Commercial Service officers in advising companies how to structure transactions in compliance with BIS licensing requirements.

Recommendation 3: Create a MENA S&T Business Development Web site linked to U.S. Government Web resources, including a guide to export licensing regulations and a schedule of BIS's seminars and workshops on licensing regulations.

International Trade Administration/Trade Development/ Chemicals, Pharmaceuticals and Biotechnology Division (ITA/TD/OMMC)

Recommendation 1: Convene a meeting with economic attaches from MENA countries. Discuss with them the top "two/three" economic priorities their governments have already endorsed and where U.S. participation would be helpful/appropriate. Since MENA, while business and profits oriented, is interested in re establishing connections and trust between the U.S. and the MENA region, its singularity could be based upon making sure that MENA countries express their needs, and their commitments announced/taken (in the general policy program of the country) with the United States offering help and re-enforcement. When priorities have been defined, contact the U.S. Commercial Service, and consult the regional S&T program inventory with the aim of confirming that there will be no duplication in activities.

Recommendation 2: Facilitate meetings between businesses/institutions; develop cooperative agreements with the appropriate MENA country organization (Government or NGOs); deliver pilot program; and revise as needed. Expand the pilot program to the region. Vis-à-vis governments and cooperation, select regional agreements which parties have already ratified; promote dialog between technical experts and assist where asked/needed in the implementation and enforcement phases of these agreements.

Massachusetts Institute of Technology/Center for Technology, Policy, and Industrial Development

Recommendation 1: Identify and involve the relevant academics and technical institutions (universities, laboratories, governmental funded initiatives) that could assist in enabling policy dialogue discussed above.

As discussed earlier, academics in the MENA region are also often the entrepreneurs who are involved financially and technically in technology-based firms and projects. Further, academics from different countries know each other through the overlap of technical interests and from international meetings. They constitute an invaluable informal network useful in fostering policy formulation and discussion.

Attachment 1

MENA Technology Commercialization: Export Control Implications

Technology	Potential Item	ECCN(s)	Reason for Control
1. Water related technologies	High pressure/volume valves & pumps	2B350, 2A226, 2B231	NP, AT, CB (purity levels)
a. Wastewater and water treatment processes	"		
b. Desalination	"		
c. Treated wastewater re-use technologies	"		
d. Water testing protocols for contaminants	"		
e. Potable water standards and testing	"		
f. Water saving agricultural practices	"		
g. Groundwater quality/quantity monitoring	"		
h. Water pollution prevention/mitigation	"		
2. Agricultural technology for incr. Production	Ammonium Nitrate Fertilizers	1C997	AT controls for T-7 states
3. Impacts of microbiological induced corrosion	Incubators, Fermenters, Flow Filtration Units	2B352	CB, AT
	Microbiological Disposal Technology	1E351	CB, AT
4. IT for development technologies (agrib/telecm)	Computers/Software/Encryption	4A003, 4A994, 5A002	NS, MT, AT, NP, EI, Tier Groups*
		5D002, 5A992	
5. Remote sensing, mapping and GPS appl.	GPS	7A994	AT controls for T-7 states
6. Chemicals	Chemical precursors (incl. Pesticides)	1C350	CB, CW, AT
	Chemical Manufacturing Equipment	2B350	CB, AT
7. Pharmaceuticals	OTC Medications	EAR99	OFAC license requirement for IR, IQ, SU, & LY
	Constituent Chemicals for manufacturing	1C350	CB, CW, AT
8. Air pollution prevention and mitigation	Toxic Gas Monitors	2B351, 2B350	CB, AT
9. Power and energy technology for incr. prod.	Portable generators	2A994	AT controls for T-7 states
a. Solar power			

b. Wind power			
10. Industrial technology for incr. Productivity	Metal Alloys	1C002	NS, NP, AT **
	Metals and Compounds	1C011	NS, MT, AT
	Electrical components	3A002, 3A992	NS, MT, AT
	Semiconductor Manufacturing Equipment	3B001	NS, AT
11. Rural development technologies			
12. Health care technology and management	Medical devices, equipment, supplies	EAR99	OFAC license requirement for IR, IQ, SU & LY
13. Construction	Heavy equipment, earthmoving equip,	EAR99	OFAC license requirement for IR, IQ, SU & LY
	Diesel engines, n.e.s., tractors and specially designed trucks, n.e.s.	9A990	AT for T-7 countries

* Computers controlled in country tiers according to diversion risk. Most developing nations in Tier 2, eligible to receive 6500 MTOPS machines NLR; higher levels require licensing

** Additional controls may apply when actual industries are identified

Key:

ECCN: export classification control number - the numbers used on the Commerce Control List (CCL) (part 774 of the Export Administration Regulations (EAR) to define entries on the CCL)

NLR: No License Required

NS: identifies items controlled for National Security Reasons; applies to all MENA states and Afghanistan

NP: identifies items controlled for Nuclear Nonproliferation reasons; depending on the item, may apply to all MENA states and Afghanistan

CB: identifies items controlled for Chemical & Biological Weapons reasons; depending on the item, may apply to all MENA states and Afghanistan

MT: identifies items controlled for Missile Technology reasons; applies to all MENA states and Afghanistan

CW: identifies items controlled in the Chemical Weapons Convention; applies to all MENA states and Afghanistan

AT: identifies items controlled for Anti-Terrorism reasons; applies to Iran, Iraq, Sudan, Syria, Sudan & Libya

EI: identifies items controlled for Encryption reasons; applies to all encryption items transferred from the U.S. Munitions List (USML) to the CCL.

n.e.s.: not elsewhere specified

MENA Embargoed States:

Iran (OFAC has licensing responsibility)

Iraq (")

Sudan (")

Libya (Licensing responsibility is split between BIS and OFAC)

Afghanistan (embargo on the Taliban, wherever located; OFAC has licensing responsibility for Taliban entities)

*For a complete list of dual-use items controlled by the Bureau of Industry and Security (BIS), please see part 774 of the Export Administration Regulations (EAR) on-line at www.access.gpo.gov/bis/ear .

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New ideas, comments, concepts, and approaches to building S&T capacity in the region are welcome and should be sent to:

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